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1 [PRIME—toward process-integrated modeling environments: 1](#)

Klaus Pohl, Klaus Weidenhaupt, Ralf Dömges, Peter Haumer, Matthias Jarke, Ralf Klamma
October 1999 **ACM Transactions on Software Engineering and Methodology (TOSEM)**,
Volume 8 Issue 4

Full text available: [pdf \(1.15 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#),
[review](#)

Research in process-centered environments (PCEs) has focused on project management support and has neglected method guidance for the engineers performing the (software) engineering process. It has been dominated by the search for suitable process-modeling languages and enactment mechanisms. The consequences of process orientation on the computer-based engineering environments, i.e., the interactive tools used during process performance, have been studied much less. In this article, we prese ...

Keywords: PRIME, method guidance, process modeling, process-centered environments, process-integrated environments, process-sensitive tools, tool integration, tool modeling

2 [Web search 1: Topic-oriented collaborative crawling](#)

Chiasen Chung, Charles L. A. Clarke
November 2002 **Proceedings of the eleventh international conference on Information and knowledge management**



Full text available: [pdf \(179.28 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A major concern in the implementation of a distributed Web crawler is the choice of a strategy for partitioning the Web among the nodes in the system. Our goal in selecting this strategy is to minimize the overlap between the activities of individual nodes. We propose a topic-oriented approach, in which the Web is partitioned into general subject areas with a crawler assigned to each. We examine design alternatives for a topic-oriented distributed crawler, including the creation of a Web page cl ...

Keywords: distributed systems, text categorization, web crawling

3 [MailCall: message presentation and navigation in a nonvisual environment](#)

Matthew Marx, Chris Schmandt
April 1996 **Proceedings of the SIGCHI conference on Human factors in computing systems: communi-**

Full text available:  pdf(1.22 MB)  Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)
[html\(46.83 KB\)](#)

Keywords: auditory I/O, interaction design, mobile computing, speech interface design, speech recognition

4 [Decay-usage scheduling in multiprocessors](#) 

D. H. J. Epema

November 1998 **ACM Transactions on Computer Systems (TOCS)**, Volume 16 Issue 4

Full text available:  pdf(377.13 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


Decay-usage scheduling is a priority-aging time-sharing scheduling policy capable of dealing with a workload of both interactive and batch jobs by decreasing the priority of a job when it acquires CPU time, and by increasing its priority when it does not use the (a) CPU. In this article we deal with a decay-usage scheduling policy in multiprocessors modeled after widely used systems. The priority of a job consists of a base priority and a time-dependent component based on processor usage. B ...

Keywords: control, convergence, decay usage, priorities, shares

5 [Session 4: video processing and transformation: Rate adaptation transcoding for precoded video streams](#) 

Zhijun Lei, Nicolas D. Georganas

December 2002 **Proceedings of the tenth ACM international conference on Multimedia**

Full text available:  pdf(186.66 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In order to transmit pre-encoded digital video over heterogeneous networks, it is necessary to employ transcoding techniques that convert pre-encoded video streams into streams having different bit rates and quality. The specified problem is referred to as rate shaping or rate adaptation. In this work, we propose a new rate control scheme for H.263+ based video transcoding. The proposed rate control scheme is comprised of Frame-Layer bit allocation and Macroblock-Layer rate control. At the frame ...

Keywords: rate adaptation, rate quantization, scene variations, video transcoding

6 [Architecting personalized delivery of multimedia information](#) 

Shoshana Loeb

December 1992 **Communications of the ACM**, Volume 35 Issue 12


Full text available:  pdf(4.96 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#), [review](#)

Keywords: casual information usage, information filtering, information retrieval, multimedia applications, personalized information delivery, user models, user profiling

7 [Balancing performance and flexibility with hardware support for network architectures](#) 

Ilija Hadžić, Jonathan M. Smith

November 2003 **ACM Transactions on Computer Systems (TOCS)**, Volume 21 Issue 4

Full text available:  pdf(719.93 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The goals of performance and flexibility are often at odds in the design of network systems. The tension is common enough to justify an architectural solution, rather than a set of context-specific solutions. The Programmable Protocol Processing Pipeline (P4) design uses programmable hardware to selectively accelerate protocol processing functions. A set of field-programmable gate arrays (FPGAs) and an associated library of network processing modules implemented in hardware are augmented with so ...

Keywords: FPGA, P4, computer networking, flexibility, hardware, performance, programmable logic devices, programmable networks, protocol processing

8 Engineering e-learning systems (ELS): Evaluating adaptive hypermedia authoring while teaching adaptive systems

Alexandra Cristea

March 2004 **Proceedings of the 2004 ACM symposium on Applied computing**

Full text available:  pdf(272.29 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


In this paper we present an interesting experiment of combining teaching and research: the testing of MOT, an adaptive hypermedia authoring tool based on the LAOS adaptive hypermedia authoring framework, via a class of about twenty graduate students from the Eindhoven University of Technology, taking a two week intensive course in Adaptive Systems and User Modeling. We will show what the incentives of the experiment were, by giving a short description of LAOS, the theoretical background; then we ...

Keywords: AHS, adaptive authoring, adaptive hypermedia, ontology

9 Resource Management: Analysis of adaptation strategies for mobile QoS-aware applications

Kurt Geihs

September 2002 **Proceedings of the 5th ACM international workshop on Modeling analysis and simulation of wireless and mobile systems**

Full text available:  pdf(202.39 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


In mobile computing environments the availability of resources may vary significantly and unpredictably at application runtime, and thus may not satisfy a negotiated QoS level. We assume that in the presence of QoS fluctuations applications adapt their behavior to the prevailing operating conditions. We present five new adaptation strategies for application adaptation and study their performance by simulation experiments. The experiments show that one strategy performs best in most configuration ...

Keywords: QoS management, adaptation strategies, adaptive applications, mobile computing, performance evaluation, simulation

10 Research sessions: data integration: Adapting to source properties in processing data integration queries

Zachary G. Ives, Alon Y. Halevy, Daniel S. Weld

June 2004 **Proceedings of the 2004 ACM SIGMOD international conference on Management of data**

Full text available:  pdf(197.27 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

An effective query optimizer finds a query plan that exploits the characteristics of the source data. In data integration, little is known in advance about sources' properties, which necessitates the use of *adaptive* query processing techniques to adjust query processing on-the-fly. Prior work in adaptive query processing has focused on compensating for delays

and adjusting for mis-estimated cardinality or selectivity values. In this paper, we present a generalized architecture for adaptiv ...

11 Technical papers: concurrency: Software model checking in practice: an industrial case study 

Satish Chandra, Patrice Godefroid, Christopher Palm

May 2002 **Proceedings of the 24th International Conference on Software Engineering**



Full text available:  [pdf \(1.16 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We present an application of software model checking to the analysis of a large industrial software product: Lucent Technologies' CDMA call-processing library. This software is deployed on thousands of base stations in wireless networks world-wide, where it sets up and manages millions of calls to and from mobile devices everyday. Our analysis of this software was carried out using VeriSoft, a tool developed at Bell Laboratories that implements model-checking algorithms for systematically testin ...

12 High-level power modeling, estimation, and optimization 

Enrico Macii, Massoud Pedram, Fabio Somenzi

June 1997 **Proceedings of the 34th annual conference on Design automation - Volume 00**


Full text available:  [pdf \(172.43 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)
 [Publisher Site](#)

In the past, the major concern of the VLSI designers were area, performance, cost, and reliability. In recent years, however, this has changed and, increasingly, power is being given comparable weight to area and speed. This is mainly due to the remarkable success of personal computing devices and wireless communication systems, which demand high-speed computation and complex functionality with low power consumption. In addition, there exists a strong pressure for manufacturers of high-end products to keep ...

13 On modeling information retrieval with probabilistic inference 

S. K. M. Wong, Y. Y. Yao

January 1995 **ACM Transactions on Information Systems (TOIS)**, Volume 13 Issue 1


Full text available:  [pdf \(1.71 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

This article examines and extends the logical models of information retrieval in the context of probability theory. The fundamental notions of term weights and relevance are given probabilistic interpretations. A unified framework is developed for modeling the retrieval process with probabilistic inference. This new approach provides a common conceptual and mathematical basis for many retrieval models, such as the Boolean, fuzzy set, vector space, and conventional probabilistic models. With ...

14 Investigation of Computer Operating Time and System Capacity for Man-Machine Digital Systems 

Harold Sackman, J. B. Munson

October 1964 **Journal of the ACM (JACM)**, Volume 11 Issue 4

Full text available:  [pdf \(1.17 MB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

15 Document creation II: Instructional information in adaptive spatial hypertext 

Luis Francisco-Revilla, Frank Shipman

October 2004 **Proceedings of the 2004 ACM symposium on Document engineering**

Full text available:  [pdf \(1.12 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Spatial hypertext is an effective medium for the delivery of help and instructional information on the Web. Spatial hypertext's intrinsic features allow documents to visually reflect the inherent structure of the information space and represent implicit relationships between information objects. This work presents a study of the effectiveness of spatial hypertext as medium for delivery of instructional information. Results were gathered based on direct observation of the people reading a spat ...

Keywords: adaptation, information delivery, spatial hypertext

16 Level of detail: Visual attention-based polygon level of detail management



Ross Brown, Luke Cooper, Binh Pham

February 2003 **Proceedings of the 1st international conference on Computer graphics and interactive techniques in Australasia and South East Asia**

Full text available: pdf(4.11 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Modern real-time graphics systems are required to render millions of polygons to the screen per second. However, even with this high polygon rendering bandwidth, there are still applications which tax this rendering capability. We introduce in this paper a technique which adaptively allocates polygons to objects in a scene according to their visual importance. It is expected that using this technique, an improvement in the perceptual quality of a rendered image should result, for the same overall ...

Keywords: level of detail management, real-time graphics, visual attention

17 Adaptive hypermedia (1): AHA! The adaptive hypermedia architecture



Paul De Bra, Ad Aerts, Bart Berden, Barend de Lange, Brendan Rousseau, Tomi Santic, David Smits, Natalia Stash

August 2003 **Proceedings of the fourteenth ACM conference on Hypertext and hypermedia**

Full text available: pdf(324.51 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

AHA!, the "Adaptive Hypermedia Architecture", was originally developed to support an on-line course with some user guidance through conditional (extra) explanations and conditional link hiding. This paper describes the many extensions and tools that have turned AHA! into a versatile adaptive hypermedia platform. It also shows how AHA! can be used to add different adaptive "features" to applications such as on-line courses, museum sites, encyclopedia, etc. The architecture of AHA! is heavily insp ...

Keywords: adaptive hypermedia, adaptive navigation support, adaptive presentation, authoring support

18 Information retrieval session 5: general retrieval issues II: Multi-resolution disambiguation of term occurrences



Einat Amitay, Rani Nelken, Wayne Niblack, Ron Sivan, Aya Soffer

November 2003 **Proceedings of the twelfth international conference on Information and knowledge management**

Full text available: pdf(371.34 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We describe a system for extracting mentions of terms such as company and product names, in a large and noisy corpus of documents, such as the World Wide Web. Since natural language terms are highly ambiguous, a significant challenge in this task is disambiguating which occurrences of each term are truly related to the right meaning, and which are not. We describe our approach for disambiguation, and show that it achieves very





high accuracy with only limited training. This serves as a necessary ...

Keyw rds: disambiguation, information retrieval, natural language processing, text mining

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1 [PRIME—toward process-integrated modeling environments: 1](#)

 Klaus Pohl, Klaus Weidenhaupt, Ralf Dömges, Peter Haumer, Matthias Jarke, Ralf Klamma
 October 1999 **ACM Transactions on Software Engineering and Methodology (TOSEM)**,
 Volume 8 Issue 4

 Full text available: [pdf\(1.15 MB\)](#)

 Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#),
[review](#)

Research in process-centered environments (PCEs) has focused on project management support and has neglected method guidance for the engineers performing the (software) engineering process. It has been dominated by the search for suitable process-modeling languages and enactment mechanisms. The consequences of process orientation on the computer-based engineering environments, i.e., the interactive tools used during process performance, have been studied much less. In this article, we prese ...

Keywords: PRIME, method guidance, process modeling, process-centered environments, process-integrated environments, process-sensitive tools, tool integration, tool modeling

2 [Modeling for text compression](#)

 Timothy Bell, Ian H. Witten, John G. Cleary
 December 1989 **ACM Computing Surveys (CSUR)**, Volume 21 Issue 4

 Full text available: [pdf\(3.54 MB\)](#)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

The best schemes for text compression use large models to help them predict which characters will come next. The actual next characters are coded with respect to the prediction, resulting in compression of information. Models are best formed adaptively, based on the text seen so far. This paper surveys successful strategies for adaptive modeling that are suitable for use in practical text compression systems. The strategies fall into three main classes: finite-context modeling, i ...

3 [Web search 1: Topic-oriented collaborative crawling](#)

 Chiasen Chung, Charles L. A. Clarke
 November 2002 **Proceedings of the eleventh international conference on Information and knowledge management**

 Full text available: [pdf\(179.28 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A major concern in the implementation of a distributed Web crawler is the choice of a


strategy for partitioning the Web among the nodes in the system. Our goal in selecting this strategy is to minimize the overlap between the activities of individual nodes. We propose a topic-oriented approach, in which the Web is partitioned into general subject areas with a crawler assigned to each. We examine design alternatives for a topic-oriented distributed crawler, including the creation of a Web page cl ...

Keywords: distributed systems, text categorization, web crawling

4 Arithmetic coding for data compression

Ian H. Witten, Radford M. Neal, John G. Cleary

June 1987 **Communications of the ACM**, Volume 30 Issue 6

Full text available:  [pdf\(1.62 MB\)](#)


Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The state of the art in data compression is arithmetic coding, not the better-known Huffman method. Arithmetic coding gives greater compression, is faster for adaptive models, and clearly separates the model from the channel encoding.

5 Dynamic file migration in distributed computer systems

Bezalel Gavish, Olivia R. Liu Sheng

February 1990 **Communications of the ACM**, Volume 33 Issue 2

Full text available:  [pdf\(1.53 MB\)](#)


Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

The importance of file migration is increasing because of its potential to improve the performance of distributed office, manufacturing and hospital information systems. To encourage research in the file migration problem, the authors summarize accomplishments of researchers of the problem, provide a detailed comparison of file migration and dynamic file allocation problems, and identify important areas of research to support the development of effective file migration policies.

6 Data compression

Debra A. Lelewer, Daniel S. Hirschberg

September 1987 **ACM Computing Surveys (CSUR)**, Volume 19 Issue 3

Full text available:  [pdf\(3.61 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

This paper surveys a variety of data compression methods spanning almost 40 years of research, from the work of Shannon, Fano, and Huffman in the late 1940s to a technique developed in 1986. The aim of data compression is to reduce redundancy in stored or communicated data, thus increasing effective data density. Data compression has important application in the areas of file storage and distributed systems. Concepts from information theory as they relate to the goals and evaluation of data ...

7 Comparing Bayes model averaging and stacking when model approximation error cannot be ignored

Bertrand Clarke

December 2003 **The Journal of Machine Learning Research**, Volume 4

Full text available:  [pdf\(248.77 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We compare Bayes Model Averaging, BMA, to a non-Bayes form of model averaging called stacking. In stacking, the weights are no longer posterior probabilities of models; they are obtained by a technique based on cross-validation. When the correct data generating model (DGM) is on the list of models under consideration BMA is never worse than stacking and often is demonstrably better, provided that the noise level is of order commensurate with

the coefficients and explanatory variables. Here, howe ...

8 Decay-usage scheduling in multiprocessors

D. H. J. Epema

November 1998 **ACM Transactions on Computer Systems (TOCS)**, Volume 16 Issue 4

Full text available:  pdf(377.13 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


Decay-usage scheduling is a priority-aging time-sharing scheduling policy capable of dealing with a workload of both interactive and batch jobs by decreasing the priority of a job when it acquires CPU time, and by increasing its priority when it does not use the (a) CPU. In this article we deal with a decay-usage scheduling policy in multiprocessors modeled after widely used systems. The priority of a job consists of a base priority and a time-dependent component based on processor usage. B ...

Keywords: control, convergence, decay usage, priorities, shares

9 Minimum cost adaptive synchronization: experiments with the ParaSol system

Edward Mascarenhas, Felipe Knop, Reuben Pasquini, Vernon Rego

October 1998 **ACM Transactions on Modeling and Computer Simulation (TOMACS)**, Volume 8 Issue 4

Full text available:  pdf(265.07 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


We present a novel adaptive synchronization algorithm, called the minimum average cost (MAC) algorithm, in the context of the parasol parallel simulation system. ParaSol is a multithreaded system for parallel simulation on shared- and distributed-memory environments, designed to support domain-specific Simulation Object Libraries. The proposed MAC algorithm is based on minimizing the cost of synchronization delay and rollback at a process, whenever its simulation driver must decide whether ...

Keywords: ParaSol, adaptive synchronization, optimal delay, optimistic synchronization, parallel and distributed simulation, stochastic simulation, thread

10 Arithmetic coding revisited

Alistair Moffat, Radford M. Neal, Ian H. Witten

July 1998 **ACM Transactions on Information Systems (TOIS)**, Volume 16 Issue 3

Full text available:  pdf(487.26 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Over the last decade, arithmetic coding has emerged as an important compression tool. It is now the method of choice for adaptive coding on myltisymbol alphabets because of its speed, low storage requirements, and effectiveness of compression. This article describes a new implementation of arithmetic coding that incorporates several improvements over a widely used earlier version by Witten, Neal, and Cleary, which has become a de facto standard. These improvements include f ...

Keywords: approximate coding, arithmetic coding, text compression, word-based model

11 A simulation model of the FAA'S flight service automation system

C. R. Spooner, A. Acampora, R. Regner

December 1985 **Proceedings of the 17th conference on Winter simulation**

Full text available:  pdf(1.12 MB) Additional Information: [full citation](#), [abstract](#)


The Flight Service Stations of the Federal Aviation Administration are in process of being

automated. To study performance, a simulation model has been built. To date, the model has been tentatively calibrated against the first version of the real system, and used to predict performance in a number of situations. The paper outlines the system being modeled, describes the model itself, and discusses some of the issues encountered during modeling. It then describes the calibration of the mode ...

12 Session 4: video processing and transformation: Rate adaptation transcoding for precoded video streams

Zhijun Lei, Nicolas D. Georganas

December 2002 **Proceedings of the tenth ACM international conference on Multimedia**

Full text available:  [pdf\(186.66 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In order to transmit pre-encoded digital video over heterogeneous networks, it is necessary to employ transcoding techniques that convert pre-encoded video streams into streams having different bit rates and quality. The specified problem is referred to as rate shaping or rate adaptation. In this work, we propose a new rate control scheme for H.263+ based video transcoding. The proposed rate control scheme is comprised of Frame-Layer bit allocation and Macroblock-Layer rate control. At the frame ...

Keywords: rate adaptation, rate quantization, scene variations, video transcoding

13 Survey of code-size reduction methods

Árpád Beszédes, Rudolf Ferenc, Tibor Gyimóthy, André Dolenc, Konsta Karsisto

September 2003 **ACM Computing Surveys (CSUR)**, Volume 35 Issue 3


Full text available:  [pdf\(443.89 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Program code compression is an emerging research activity that is having an impact in several production areas such as networking and embedded systems. This is because the reduced-sized code can have a positive impact on network traffic and embedded system costs such as memory requirements and power consumption. Although code-size reduction is a relatively new research area, numerous publications already exist on it. The methods published usually have different motivations and a variety of appli ...

Keywords: code compaction, code compression, method assessment, method evaluation

14 A general-purpose compression scheme for large collections

July 2002 **ACM Transactions on Information Systems (TOIS)**, Volume 20 Issue 3

Full text available:  [pdf\(260.29 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#), [review](#)

Compression of large collections can lead to improvements in retrieval times by offsetting the CPU decompression costs with the cost of seeking and retrieving data from disk. We propose a semistatic phrase-based approach called xray that builds a model offline using sample training data extracted from a collection, and then compresses the entire collection online in a single pass. The particular benefits of xray are that it can be used in applications where individual records or documents must b ...

Keywords: phrase-based compression, random access, sampling

15 Balancing performance and flexibility with hardware support for network architectures

Ilija Hadžić, Jonathan M. Smith

November 2003 **ACM Transactions on Computer Systems (TOCS)**, Volume 21 Issue 4

Full text available:  [pdf\(719.03 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The goals of performance and flexibility are often at odds in the design of network systems. The tension is common enough to justify an architectural solution, rather than a set of context-specific solutions. The Programmable Protocol Processing Pipeline (P4) design uses programmable hardware to selectively accelerate protocol processing functions. A set of field-programmable gate arrays (FPGAs) and an associated library of network processing modules implemented in hardware are augmented with so ...

Keywords: FPGA, P4, computer networking, flexibility, hardware, performance, programmable logic devices, programmable networks, protocol processing

16 [Web technologies and applications \(WTA\): Adaptive data dissemination and caching for edge service architectures built with the J2EE](#)

Erich Liebmann, Schahram Dustdar

March 2004 **Proceedings of the 2004 ACM symposium on Applied computing**

Full text available:  [pdf\(326.59 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The deployment of distributed enterprise applications and e-business solutions, that leverage edge service architectures across wide area networks, require flexible and adaptable models for data dissemination and caching. In this paper we present the design of an architecture that streamlines the integration of proactive data dissemination and caching into e-commerce solutions built with the Java 2 Enterprise Edition. The utilization of an adaptive push and pull approach combined with the flexib ...

Keywords: J2EE, JMS, adaptive, caching, data dissemination, data services layer, distributed enterprise applications, edge services, pull, push

17 [An Adaptive Nonlinear Least-Squares Algorithm](#)

John E. Dennis, David M. Gay, Roy E. Walsh

September 1981 **ACM Transactions on Mathematical Software (TOMS)**, Volume 7 Issue 3

Full text available:  [pdf\(1.39 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

18 [MailCall: message presentation and navigation in a nonvisual environment](#)

Matthew Marx, Chris Schmandt

April 1996 **Proceedings of the SIGCHI conference on Human factors in computing systems: common ground**

Full text available:  [pdf\(1.22 MB\)](#)  [html\(46.83 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: auditory I/O, interaction design, mobile computing, speech interface design, speech recognition

19 [Web crawling and measurement: Efficient URL caching for world wide web crawling](#)

Andrei Z. Broder, Marc Najork, Janet L. Wiener

May 2003 **Proceedings of the twelfth international conference on World Wide Web**

Full text available:  [pdf\(174.37 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Crawling the web is deceptively simple: the basic algorithm is (a) Fetch a page (b) Parse it to extract all linked URLs (c) For all the URLs not seen before, repeat (a)-(c). However, the

size of the web (estimated at over 4 billion pages) and its rate of change (estimated at 7% per week) move this plan from a trivial programming exercise to a serious algorithmic and system design challenge. Indeed, these two factors alone imply that for a reasonably fresh and complete crawl of the web, step (a) ...

Keywords: URL caching, caching, crawling, distributed crawlers, web crawlers, web graph models

20 Location-aware query processing in mobile database systems

Hans-Erich Kottkamp, Olaf Zukunft

February 1998 **Proceedings of the 1998 ACM symposium on Applied Computing**

Full text available:  pdf (772.70 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)


Keywords: location-aware queries, mobile computing, mobile database, query processing

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John Colter, Netscape Navigator

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